

Annual report

Welsh Government
Energy Service

2022-23



Gwasanaeth Ynni
Energy Service

Bonwm hydro,
Corwen Electricity co-operative

Welsh Government Energy Service: Our impact

The Welsh Government has ambitious targets for reducing greenhouse gas emissions and generating locally owned, renewable energy to help deliver a greener, stronger, fairer Wales.

Since 2018, we, the Welsh Government Energy Service, have been providing public sector organisations and community enterprises across Wales with technical, commercial, funding and procurement advice.

This work increases renewable generation and decarbonisation, helping to reach a collective ambition for a [net zero Wales](#) by 2050.

“The Welsh Government Energy Service program is a critical part of our ambition to realize a Net Zero Wales by 2050. Since 2018, Public sector and community enterprises have achieved impacts that reduce energy use, generate locally owned renewable energy and lower carbon emissions. The Energy Service support has secured more investment and created savings to drive further action. The work so far provides a firm foundation to continue to build a Team Wales approach, involving everyone in tackling climate change at speed in this climate emergency.”

Julie James, Climate Change Minister

Overall impact July 2018 – March 2023

Impacts from implemented projects*

We successfully supported the installation of energy efficiency, renewable energy and zero emission fleet projects across Wales:

- Level of investment
 - The public sector and community enterprises invested £169.8m to install energy efficiency, renewable energy and zero-emission fleet projects.



- Energy generation
 - Installed 40.5 MW of new renewable energy capacity in Wales.
 - That’s enough electricity to power 16,000 homes.
 - Or light every castle in Wales for 5 years.
- Savings forecast
 - £320.8m in local income and savings over the lifetime of the projects.
- Carbon savings forecast
 - 695,000 tonnes of CO₂e.
 - That’s the same as driving a car around Wales 1.7 million times.

Projects

Number of installed projects we supported, by technology type, 2018-2023:



8
standalone
solar farms



4
wind power
projects



106
building energy
efficiency and rooftop
solar installations



25
Re:fit programmes¹



13
low carbon
heating systems



3
hydropower
projects



34
energy efficient street
lighting installations



95
zero emission
vehicle fleet and
electric vehicle
charging projects

Number of installed projects we supported, by organisation type, 2018-2023:

- 173 projects for 21 local authorities
- 38 projects for 7 health boards
- 11 projects for 3 health trusts and NHS shared services
- 12 projects for 7 universities
- 2 projects for 2 colleges
- 6 projects for 2 fire and rescue organisations
- 3 projects for 2 national parks
- 4 projects for the national museums
- 1 project for the Sports Council
- 29 projects for 12 community organisations
- 9 projects for 9 community councils



Swansea City Council, electric fleet

1. The Re:fit programme is a procurement mechanism for public bodies delivering energy efficiency measures and local energy generation projects on their assets at pace and scale.

Our achievements in 2022-23

Hear the stories of the people behind the projects: tap below to watch a video case study of three of our projects.



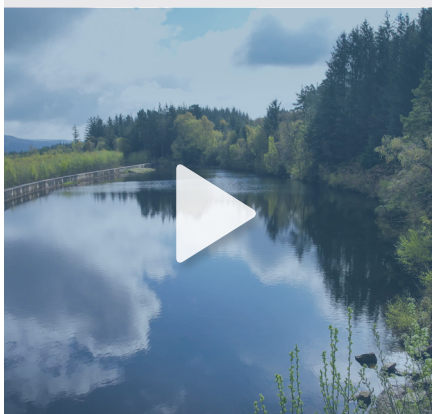
Energy efficiency

Cardiff & Vale University Health Board



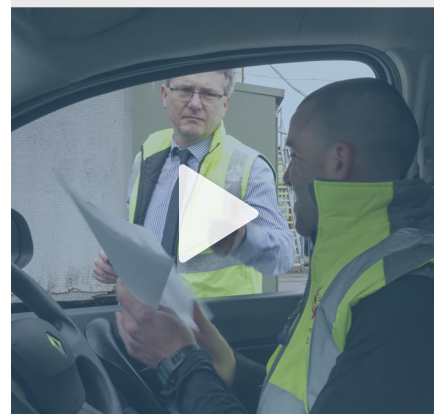
Renewable energy

Bonwm hydro, Community Enterprise



Vehicle fleet

Swansea City Council



Aberystwyth University, solar array opening with Welsh Government Climate Change Minister, Julie James.

What we supported and where in 2022-23

£28.9m secured for energy efficiency, renewable energy and zero-emission fleet projects, supporting to financial close**:

2 projects for **2** community enterprises

9 projects for **4** health boards and shared services

2 projects for **2** universities

2 projects for **2** colleges

1 project for **1** national park

3 projects for **1** NHS trust

56 projects for **17** local authorities

£1.2m of grant funding to 15 community enterprises to support renewable energy project development and capacity building.

Estimated £47.1m in lifetime savings and income for the public sector and community enterprises from these projects once installed.

Estimated lifetime savings of 95,500 tonnes of CO₂e – the same amount of CO₂e as taking all the vehicles in Torfaen off the road for a year.



“It’s been great to work with people who share the same passion.”

“I recently started working with the Energy Service and I am already seeing the positive impacts the work has on communities. It’s been great to work with people who share the same passion for decarbonising the energy system and I have enjoyed learning about the variety of different projects the Energy Service supports. I believe I have gained valuable insights into developing renewable energy projects that I can use in the future.”

**Becky Hockett, Programme Support Officer,
Welsh Government Energy Service**

Workstreams



Regional energy planning

A Wales-wide approach for our four regions

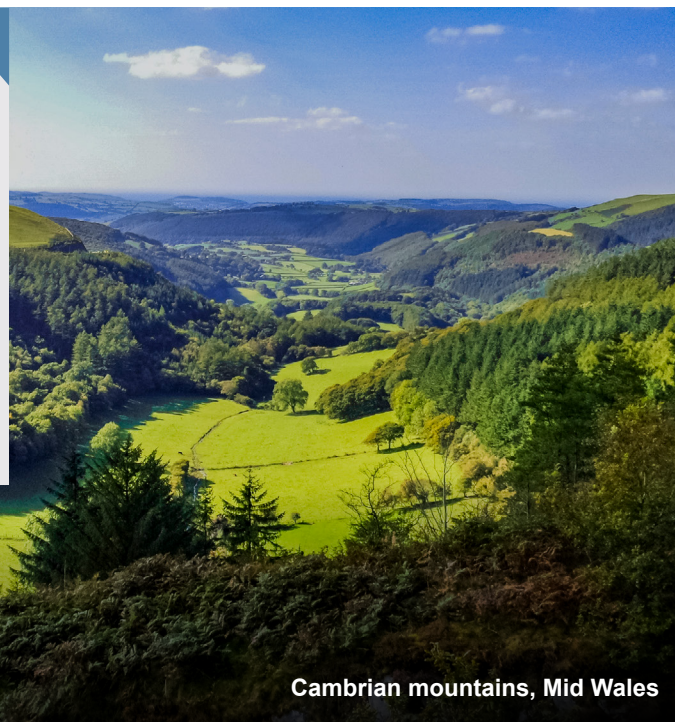
We collaborate with partners across the public, private and community sectors to build actionable energy strategies that encourage sustainable growth, reduce fuel poverty and support Welsh Government's net zero ambitions in every corner of Wales. In 2022-23 we have:

- Worked with key stakeholders to develop Strategic Action Plans for each region.
- Consulted more than 100 stakeholders to gain support and provide a platform to discuss collaboration opportunities.
- Supported the recruiting of new regional posts to coordinate delivery of the Strategic Action Plans.



“The Mid Wales Region has benefitted from excellent partnership working provided by the Energy Service supporting the delivery of key pieces of strategy and planning relating to the decarbonisation of our energy system. On a local authority level, they have delivered key exploratory studies such as fleet and land asset reviews, and provide invaluable support to energy officers with Salix funding proposal development and delivery.”

Tom Yeo, Energy Lead, Growing Mid Wales



Cambrian mountains, Mid Wales



Energy efficiency

Doing more to use less energy

We worked with public bodies across Wales to help meet the Welsh Government’s ambitions for a net zero public sector by 2030. The energy efficiency projects we supported during 2022-23 ranged from installing LED streetlights to low carbon heating for public sector buildings such as leisure centres and schools, helping Wales do more while using less.

Impacts of the energy efficiency projects reaching financial close in 2022-23**

Number of projects

23 energy efficiency projects for 15 organisations



Carbon savings forecast

74,700 tonnes of CO₂e



Cost savings forecast

£34m estimated savings over the economic lifetimes of the projects

Re:fit Cymru

Of the £12.7m invested, £2.4m was secured for 2 Re:fit projects



Investment

A total of £12.7m invested

Case study: Cardiff and Vale University Health Board

Summary

The Energy Service supported Cardiff and Vale University Health Board with its energy efficiency programme during 2022-23, assisting with surveys and Re:fit funding application support. The £7.1m fund, awarded across multiple years, has been used to install technologies that will pay back within 8 years.

Measures

- 20,500 light-emitting diode (LED) light fittings
- 2,500 solar photovoltaic (PV) panels
- 23 high efficiency fans
- Valve and pipework insulation
- Building energy management system improvements, including 48 energy controller upgrades

Impacts

- £0.9m saving on annual energy bills
- Improved patient care



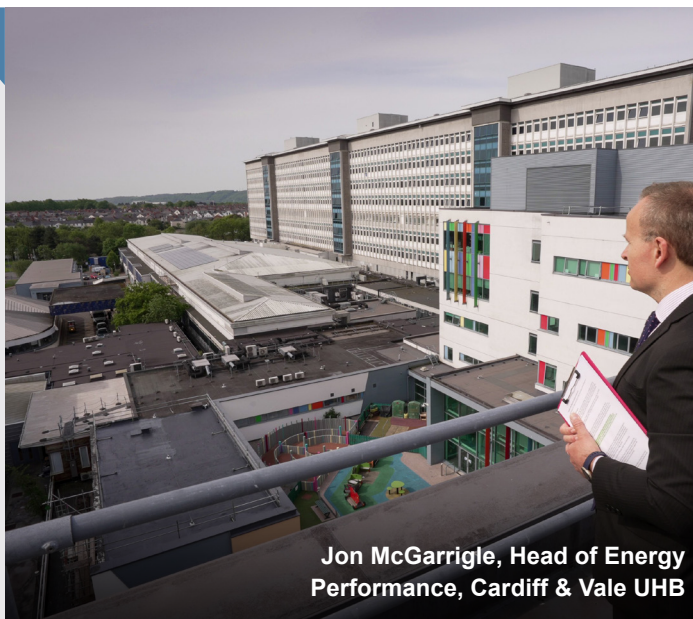
“Having these energy improvements installed has made a significant difference to the Children’s Hospital. It means we can care for our patients in an improved environment that offers them comfort and well-being”

Alison Oliver, Directorate Manager, Children’s Service Cardiff & Vale UHB



“Cardiff and Vale University Health Board’s Re:fit programme, with support from Welsh Government Energy Service, has delivered significant carbon and energy savings while improving the engineering infrastructure of the Estate. This ensures that the Welsh Government’s plans for a low carbon Wales and NHS decarbonisation strategy are being progressed, with highest quality patient care being provided with lowest possible carbon emissions.”

Jon McGarrigle, Head of Energy & Performance, Cardiff and Vale University Health Board



Jon McGarrigle, Head of Energy Performance, Cardiff & Vale UHB

Case study: Welsh Ambulance Services NHS Trust

Summary

The Welsh Government approved funding for a major decarbonisation project at the Area Ambulance Centre (AAC) Flintshire. The project will reduce carbon emissions and provide a fit for purpose wellbeing area on site. The Energy Service supported with technical guidance throughout, from assessing the opportunity to implementing the technology. The project included installation of a solar PV array and battery storage, plus replacement of the liquid petroleum gas (LPG) source heating with an air source heat pump. Redevelopment of two hectares of land surrounding the site included the planting of 2,500 British native trees, adding to the mature woodland the site already enjoys.

Measures

- LED lighting
- Solar PV panels
- Air-to-air heat pump
- Battery storage
- EV charger

Impacts

- 52% reduction in national grid electricity use
- Saving 38 tonnes of CO₂e



“With Welsh Government Energy Service support, we were able to develop a scope of work to reduce the operational carbon emissions at AAC Flintshire, which can be used as a sustainable energy retrofit blueprint across our freehold estate.”

Nicci Stephens, Estates Officer and Environmental Specialist, Welsh Ambulance Services



Renewable energy

A natural switch

Our support for renewable energy projects in Wales extends from the concept stage through to financial close and completion, helping to harness Wales’ natural resources and turn ideas into reality for community enterprises and public bodies across the country.

Impacts of the renewable energy projects reaching financial close in 2022-23

Number of projects



2 standalone renewable energy projects for 2 organisations, in addition to 12 building mounted solar projects included within energy efficiency projects

Investment

A total of £4.2m invested in standalone renewables

Total energy generation and carbon savings



1.97 MW of new standalone renewable energy projects, with lifetime savings of 13,384 tonnes of CO₂e

An additional 4.29 MW of solar energy capacity installed on public buildings as part of projects in the energy efficiency workstream



This is equivalent to providing the annual electricity needs of 1,500 homes

Renewable energy: Community Energy Resource Grant

A new package of support from the Energy Service in 2022-23, the Community Energy Resource Grant, funds the costs of staff in community enterprises to help accelerate the development of local energy projects and strengthen the capacity of these organisations.

The grant focuses on enabling organisations to employ staff to build technical and internal project management capacity and to retain these skills within local communities. In the long term, this is

expected to support more high impact community energy projects that deliver positive outcomes for local communities across Wales.

Impacts

- Support provided to 10 community energy enterprises across Wales.
- Almost £1m in funding available for these projects, helping to sustain paid roles in recipient communities for at least the next 2 years.

“We have identified a particular gap in engagement between the community and the emerging marine energy sector that is developing in Pembrokeshire and potentially offers significant community benefits. The Community Energy Resource grant will help us to work with existing community energy groups and partners, to map out and develop an engagement plan for communities across the county.”

Ruth Lovell, Director, Community Energy Pembrokeshire





Case study: Bonwm Hydro

The 100kW Bonwm Hydro scheme, located near Corwen, Denbighshire, is expected to generate an average of 310 MWh of electricity annually. Developed by Corwen Electricity Co-operative, the hydropower project will use water from the Nant Llechog stream to power homes in the area.

There is potential for the project to be linked to a local energy market, such as the existing Corwen Energy Local Club, whose members can buy electricity from the scheme at a lower cost.

The Energy Service supported the project through advice and support, including grants towards the costs of feasibility work and securing all the necessary permissions, such as the planning consent, the abstraction and impoundment licences, and the lease agreement with the landowner. The Energy Service also helped secure £416,000 to fund the construction of the scheme.

Impacts

- Displaces almost 1,000 tonnes of CO₂e emissions over its 35-year lifetime.
- Generates an estimated £220,000 of surpluses for the community over 26 years.²
- Offers employment opportunities through local business construction contracts.

“We wanted to build a scheme that would be locally owned and bring benefits to the community. Having worked previously with the Energy Service on another scheme in the town, we approached the team on our proposed run-of-river hydro project at Bonwm. Once again, the professional and close support from the Energy Service was vital to getting the scheme over the line.”

**Michael Paice, Chairman,
Corwen Electricity Co-operative**



Silas Jones, Director,
Corwen Energy Co-operative

2. The community interest (lease duration) for this project is 26 years.



Vehicle fleet

Driving towards decarbonisation

We work with public bodies on their transition to zero-emission vehicle fleets. From funding for electric vehicles to advice on charging infrastructure, we are helping set Wales on the road to zero carbon travel.

Impacts of the fleet projects reaching financial close in 2022-23

Number of projects

38 fleet projects for 25 organisations



Investment

A total of £12m invested in electric vehicles and charge points, of which £1.5m is from Welsh Government grant funding



Total carbon savings

Saving 7,700 tonnes of CO₂e – which is the equivalent annual emissions from 1,900 UK homes



Case study: Cardiff City Council

Summary

We worked with Cardiff City Council to conduct a fleet review, which identified an opportunity to improve the city’s electric vehicle charging infrastructure. We provided grant support to the council and helped them secure grant from the Welsh Local Government Association, who later rolled out grants to all Welsh local authorities.

Impacts

- Cardiff City Council now has 81 electric vehicles.
- £0.3m of funding from the Energy Service towards the purchase of 23 electric vehicles and 10 charge points for the fleet.
- Cardiff is on track to transition to a fully electric vehicle fleet by 2030.



Cardiff City Council, electric fleet

“The funding to date has been key to Cardiff starting its journey to a low carbon fleet; without it, we would not have progressed to our current position. The cumulative infrastructure funding supported by the Energy Service has helped us implement 81 x 7kW charge points across the authority and 1 x 50kW DC rapid charger.”

Richard Jones, Fleet Manager, Cardiff City Council



Case study: Swansea City Council

Summary

We worked with Swansea City Council to review their fleet of 850 vehicles, to assess energy consumption and outline a plan for transitioning to a zero-emission fleet by 2030.



Councillor Andrea Lewis, Deputy Leader, Swansea City Council

Swansea City Council now has 73 battery electric vehicles, including cars, light and heavy vans, road sweepers, and refuse trucks. The Energy Service funded the purchase of 34 electric vehicles which helped cover the cost difference between battery electric vehicles and diesel or petrol equivalents.

Impacts

- £0.3m of grant funding provided for the purchase of 34 vehicles.
- £0.3m public sector energy bill saving over lifetime.
- 512 tonnes of CO₂e saved.

“Our recent experience with the Energy Service fleet reviews has proven to be exemplary and highly valued. The level of detail provided in the review reports was superb and provided critical guidance as we set out our plans for our zero-emission vehicle transition. The expertise not only helped bridge a knowledge gap, but the subsequent continuing support has assisted in developing a clear pathway towards successfully implementing electric vehicles and infrastructure for our fleet.”

Mark Barrow, Fleet Manager, Swansea City Council



Swansea City Council, electric fleet

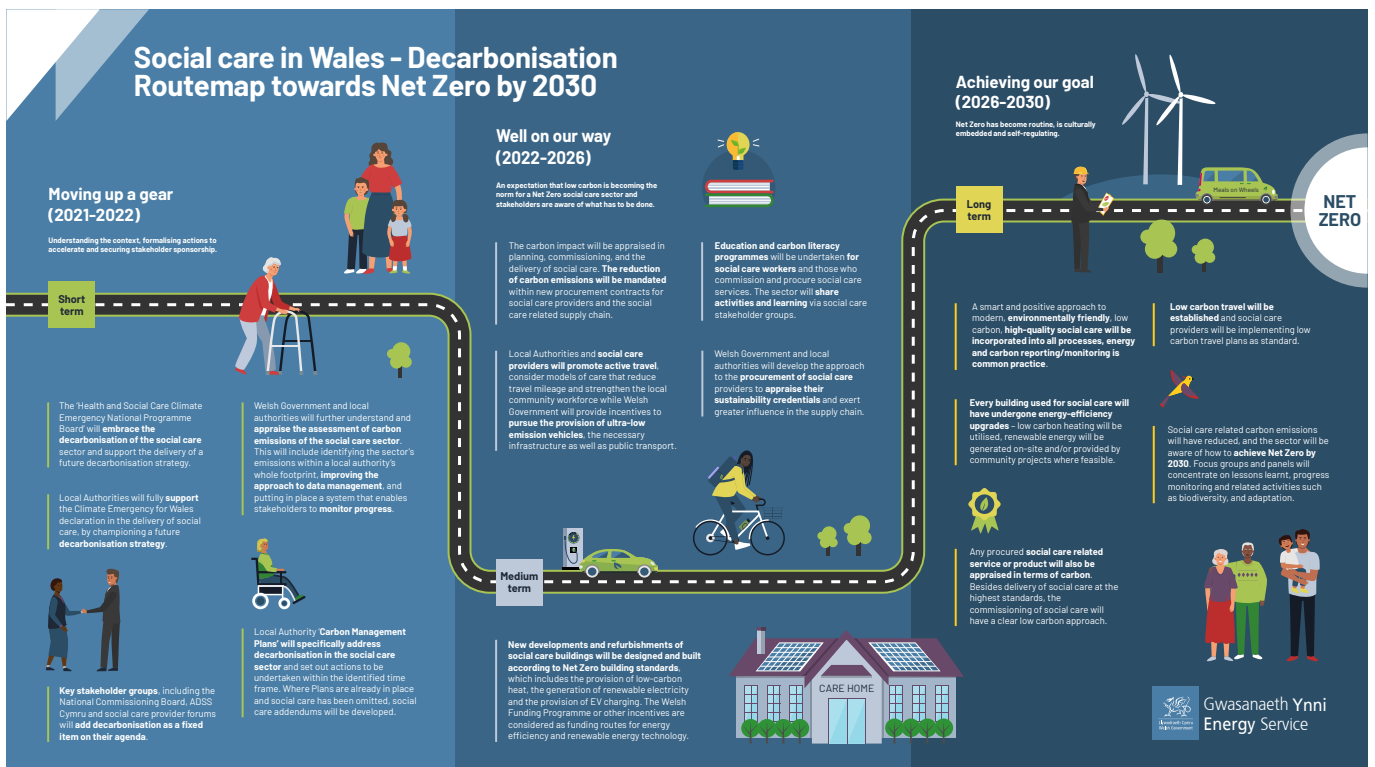
Additional work

Social care

Working with stakeholders from across the social care sector, we identified and started to quantify the sources of carbon emissions associated with the provision of social care across Wales. Through this collaboration, we developed the [Social care in Wales – Decarbonisation Routemap towards Net Zero by 2030](#).

The routemap lists 15 initiatives that those working in the sector can adopt by 2030 to improve their understanding of carbon emissions and reduce their impact when delivering social care services, including:

- Promotion of active travel, supported by incentives for low emission vehicles.
- Education and carbon literacy training for social care workers.
- Energy efficiency upgrades to buildings used for social care, including low carbon heating and renewable energy generation.



Behaviour change

We supported the Welsh Government with advice on achieving transformational behaviour change across the public sector workforce. We provided research and strategic recommendations on enabling behaviour change in the public sector with a specific focus on shifting workforce commuting practices.

A total of 320 public sector employees were consulted through an online survey and 10 workshops. Recommendations on commuting ranged from organisational-wide initiatives, such as applying flexible office policies in which employees use their closest workplace, to country-wide proposals like investing in more frequent and reliant public transport.

Strategic recommendations for enabling behaviour change across the public sector workforce in Wales:

- 1 Acknowledge the influence of organisational practices on individual behaviours
- 2 Set up governance arrangements for addressing behaviour change in the public sector
- 3 Adopt a collaborative approach to developing behaviour change interventions
- 4 Take a 'systems view' to determine the interactions between different policy decisions
- 5 Apply the principles of the energy hierarchy to behaviour change interventions
- 6 Tailor the approach to the organisation and the audience
- 7 Decide upfront on how to measure impact and progress of interventions
- 8 Focus on removing physical or structural barriers first, before psychological barriers



“According to the Climate Change Committee, behaviour change will account for almost a third of emissions reductions up to 2035. However, we can't expect individuals to make the necessary changes on their own. This project was a great opportunity to explore how Welsh Government and public sector organisations can play a vital role in influencing their employees' individual practices in the workplace.”

Eva Casadevall Ayats, Project Manager, Welsh Government Energy Service

A net zero Welsh Government

We supported the Welsh Government with the development of its first [Net Zero Strategic Plan](#), which outlines its own contribution to achieving net zero across the public sector by 2030. The plan brings together evidence and thinking from across government to set ambitious carbon emission reduction targets and commit to 54 initiatives to progress towards net zero.

The initiatives, which address Welsh Government

buildings and infrastructure, transport and business travel, commuting, and supply chain, have been developed in collaboration with public sector employees and technical experts, to identify key opportunities to reduce carbon emissions.

The Welsh Government will now work to integrate net zero into business as usual to ensure that reducing carbon emissions becomes integral to the decision and policy making process.

Knowledge sharing

We have invested more time and resource into sharing best practice to build capacity among our stakeholders. We have prioritised case studies and guidance notes to exemplify and address common issues and questions, allowing the Energy Service to support several organisations at once.

A full list of resources can be found on the [Welsh Government website](#). These include guidance on how to effectively use [stakeholder engagement](#) to propel decarbonisation projects, [energy efficiency tips](#) for Energy Managers, and detailed advice on [battery electric vehicle mileage rates](#) for Fleet Managers.



Mark Williams, Partnerships Director,
Vital Energi recording Cardiff & Vale
UHB case study video

Wales Climate Week

From 21 – 25 November 2022, the Welsh Government hosted Wales Climate Week, with a focus on [engaging the general public in action on climate change](#). Our team hosted two sessions:

- [Low Carbon Heat Retrofit for Public Sector Non-Domestic Buildings](#): Explored the challenges, opportunities and considerations when embarking on a low-carbon heat project. This session was co-hosted with Ross Cudlipp, Energy and Sustainability Manager at Newport City Council, who shared the Council's experience and learnings.



- [Net Zero Wales – Behaviour change in the public sector workforce](#): provided research and recommendations on enabling behaviour change and how to address workforce commuting practices.



Bonwm hydro,
Corwen Electricity co-operative

Find out more about how the Welsh Government Energy Service can help your community or public sector organisation:

Website: [Click here](#)

Email: enquiries@energyservice.wales



[@_energyservice](#)



[welsh-government-energy-service](#)

Calculation details

* The lifetime savings are an estimate of total financial and carbon savings over the operational lifetime of the project. Carbon savings have been calculated using the current carbon conversion factors provided by the UK Government Department for Energy Security and Net Zero and multiplied by the estimated economic life of a project. This is known as the 'persistence factor methodology'.

** 'Financial close' means the projects have finance formally committed and there is a high likelihood that the project will progress to implementation/installation. This finance could come from a range of sources such as an organisation's own internal funds, the Wales Funding Programme, the Welsh Government Local Energy Loan Fund, community shares or other sources. A small proportion of projects do not progress to implementation, for various reasons. For any Welsh Government financed projects, discontinued project finance would be released for other decarbonisation projects.



Gwasanaeth Ynni
Energy Service

The Welsh Government Energy Service (“**WGES**”) is funded by the Welsh Government with the aim of developing energy efficiency, renewable energy and fleet decarbonisation projects that contribute to public sector decarbonisation and national energy targets. The WGES is delivered by the Carbon Trust, Energy Saving Trust, and Local Partnerships (the “**Delivery Partners**”). This report (the “**Report**”) has been produced by the Delivery Partners and, whilst the views expressed in it are given in good faith based on information available at the date of this Report:- (i) these views do not necessarily reflect the views of the Welsh Government, which accepts no liability for any statement or opinion expressed in the Report; (ii) the Report is intended to provide general guidance only, rather than financial, legal or technical advice for the purposes of any particular project or other matter, and no-one in receipt of the Report should place any reliance on it in substitution for obtaining their own advice from an appropriate third party advisor; and (iii) any person in receipt of this Report should therefore obtain their own financial, legal, technical and/or other relevant professional advice insofar as they require specific guidance on what action (if any) to take, or refrain from taking, in respect of any project, initiative, proposal, involvement with any partnership or other matter to which information contained in the Report may be relevant; and (iv) the Delivery Partners accept no liability in respect of the Report, or for any statement in the Report and/or any error or omission relating to the Report.